ARKIV FÖR FYSIK Band 2 nr 34

Communicated 7 June 1950 by ERIK HULTHÉN

The presumed $^1\Sigma^-$-term in AlH

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In an investigation of some of the bandsystems in AlH, the band at 4980 Å reported by HOLST[1] as a $^1\Sigma^- - {}^1\Pi$ transition was remeasured. From the analysis it turned out to be a $^1\Pi - {}^1\Sigma^+$ band. That it is in fact the $(0-2)$ band of the wellknown $^1\Pi - {}^1\Sigma^+$ ground state transition may easily be verified from the known termvalues of the levels involved.

Measuring only the Q- and P-branches of the band HOLST has obviously overlooked the possibility that the obtained Δ_1 values of the Λ-doubled $^1\Pi$ state may equally well originate from a $^1\Pi - {}^1\Sigma^+$ as a $^1\Sigma^- - {}^1\Pi$ transition. The erroneous $^1\Sigma^-$ term of AlH has been the object of much discussion as it does not fit the scheme of allowed terms derived from Wigner and Witmer's correlation rules.[2, 3]

According to the tables published recently by HERZBERG[4] the only diatomic molecule known with certainty to possess a $^1\Sigma^-$ state is AlH. Thus there seems to remain no fully substantiated case of a transition involving a $^1\Sigma^-$ state.

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[1] HOLST, ZS. f. Phys. *90.* 735 (1934).

[2] GERÖ-SCHMID, ZS. f. Phys. *111,* 588 (1938) and *115,* 47 (1940).

[3] HULTHÉN, ZS. f. Phys. *113,* 132 132 (1939).

[4] HERZBERG, Spectra of Diatomic molecules, Van Nostrand 1950.

Tryckt den 22 september 1950

Uppsala 1950. Almqvist & Wiksells Boktryckeri AB